CLEARWATER
GROUP
Environmental Services

June 17, 2005

Mr. Mark Verhey
Certified Engineering Geologist
Humboldt County Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

Re: **Groundwater Monitoring Report - First Quarter 2005**
Seymour Residence
1111 Riverside Drive
Rio Dell, CA
LOP # 12032
Project # AE001E

Dear Mr. Verhey,

On behalf of Jean and Everett Seymour, Clearwater Group (Clearwater) has prepared this *First Quarter 2005 Groundwater Monitoring Report.* It presents background information, monitoring activities and monitoring results, conclusions, recommendations, and the planned activities for the referenced property (see **Figure 1** for a vicinity map).

Background

The subject site had one 550-gallon capacity gasoline underground storage tank (UST). The tank location is shown in **Figure 2.** The tank was operated until 1987 when permitting began for in-place closure of the UST. In February 1988, the tank was abandoned in-place in accordance with the requirements of the Humboldt County Division of Environmental Health (HCDEH). According to HCDEH files, one soil sample (Rio Dell) was collected from an unspecified location by Beacom Construction of Fortuna, CA under HCDEH supervision in the vicinity of the UST at that time. Soil analytical results indicated that a release of petroleum hydrocarbons had occurred.

In February 1989, three additional soil samples (B-1, B-2, B-3, **Figure 2**) were collected by Beacon Construction from the south end of the tank. The depth and specific locations of each of the three borings is unknown. However, patches in a concrete drive suggest the locations of these three former boring locations. Laboratory analytical results indicate that two of the three soil samples (B-2 and B-3) contained detectable concentrations of gasoline-range hydrocarbons.

In June 1999, the HCDEH collected groundwater samples from two borings (B-1 and B-2, **Figure 2**) from the vicinity of the closed UST. Each boring was advanced using a hand auger to a depth of approximately 7 to 8 feet below ground surface (bgs). The HCDEH also collected one groundwater sample from an on-site irrigation well (no longer used for drinking water). Of the three samples collected by the HCDEH, only the groundwater sample collected from boring B-1 contained detectable concentrations of petroleum hydrocarbons. In a letter dated May 30, 2000, the HCDEH requested that a hydrogeologic investigation be performed. Clearwater subsequently prepared and submitted a *Workplan for Subsurface Investigation* dated July 19, 2000 to the HCDEH.

On December 8, 2000, Clearwater advanced five soil borings near the abandoned UST to define the extent of petroleum hydrocarbon contamination at the subject property. The borings were advanced by hand Geoprobe™ equipment to depths ranging from 8 to 10 feet bgs. The soil borings were located north, northwest, west, and south of the former UST (**Figure 2**). Data collected during this investigation are presented in Clearwater's *Subsurface Investigation Report* dated March 23, 2001.

In a letter dated May 15, 2001, the HCDEH requested a two-phase Corrective Action Plan be prepared to implement Clearwater recommendations contained in an *Initial Subsurface Investigation Report*, dated January 25, 2001, which included installation of groundwater monitoring wells and possible excavation of the abandoned UST. Clearwater subsequently prepared and submitted a *Corrective Action Phase 1 / Subsurface Investigation and Remediation Workplan,* dated June 14, 2001 per HCDEH's request.

On March 7, 2002, Clearwater supervised the installation of four monitoring wells (MW-1, MW-2, MW-3 and MW-4, **Figure 2**) and initiated a quarterly groundwater-monitoring program. Results of monitoring well installation and the first quarterly groundwater monitoring are

presented in Clearwater's *Monitoring Well Installation and First Quarter 2002 Groundwater Monitoring Report* dated April 3, 2002. Well construction data of these wells is presented in **Table 1**.

In June 2004, Clearwater group produced a *Remediation Workplan Addendum* recommending the application of a bioremediation system to reduce the dissolved phase hydrocarbon contamination around MW-1. The proposed method was an In-situ Oxygen Curtain (iSOC) system.

The workplan was accepted by the HCDEH and in August 2004, Clearwater group conducted a baseline microbiological study at the property. Various biological and geo-chemical parameters were tested and analyzed. The results indicated that the core of the hydrocarbon plume or "hot spot" had become anaerobic over time, either from slow biodegradation of petroleum hydrocarbons or the biodegradation of other organic material, which is present in the aquifer. Microbial analyses indicated that hydrocarbon-degrading microbes are present in both MW-1 and MW-2. Chemical concentrations of the petroleum hydrocarbons are within the range for effective enhanced bioremediation. One iSOC unit was recommended to be installed in MW-1.

The HCDEH concurred with the Clearwater findings and approved the iSOC installation in MW-1. On October 6, 2004 one iSOC unit was installed in MW-1. The unit was monitored at 2, 4 and 8 week intervals and then on a monthly basis.

On March 1, 2005, Clearwater Group received a letter from the HCDEH requesting further investigations to delineate and monitor possible down-gradient contamination. Clearwater responded to the letter stating that before conducting further investigations it would be wise to assess the performance of the iSOC system and to wait to see the results of the third quarter groundwater-monitoring event. The HCDEH concurred with these comments and recommendations.

Groundwater Monitoring Activities

The First Quarter 2005 groundwater monitoring was conducted on 18 April 2005. Monitoring wells MW-1 through MW-4 were gauged, purged, and subsequently sampled. Clearwater used an electronic water level indicator, accurate to within ±0.01 foot, to gauge depth to water. The wells

were checked for the presence of separate-phase hydrocarbons (SPH) prior to purging. No measurable thickness of SPH was observed in any of the wells.

In preparation for sampling, the wells were purged of groundwater until water quality parameters (temperature, pH, and conductivity) stabilized. Purging devices were cleaned between use by an Alconox® wash followed by double rinse in clean potable water to prevent cross-contamination. Rinseate and purge water was stored on-site in a labeled 55-gallon drum pending future removal and disposal.

Following recovery of water levels to at least 80% of their static levels, Clearwater collected groundwater samples from the wells using disposable polyethylene bailers and transferred to laboratory supplied containers. Sample containers were labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory. Groundwater samples collected from MW-1 were analyzed for concentrations of total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene and xylenes (BTEX), methyl tertiary butyl ether (MTBE), di isopropyl ether (DIPE), tertiary amyl methyl ether (TAME), ethyl tertiary butyl ether (ETBE) and tertiary butyl alcohol (TBA) using U.S. Environmental Protection Agency (EPA) Method 8260B. Groundwater samples collected from MW-2 through MW-4 were also analyzed for concentrations of TPH-g and BTEX by EPA Method 8260B. Laboratory work was conducted by Kiff Analytical, a Department of Health Services (DHS)-certified laboratory, located in Davis, California. Below summarizes monitoring activities during this quarter:

Wells gauged:	MW-1, MW-2, MW-3 and MW-4
Wells sampled:	MW-1, MW-2, MW-3, and MW-4
Field Analysis:	DO, ORP, Total and Ferrous Irons (MW-1 through MW-4)
Laboratory analyses:	TPH-g, BTEX, MTBE, DIPE, TAME, ETBE, TBA (for MW-1 by EPA Method 8260B); TPH-g and BTEX (for MW-2, MW-3, and MW-4 by EPA Method 8260B)

Field activities described above were conducted in accordance with Clearwater's Groundwater Monitoring and Sampling Field Procedures (**attached**). Groundwater gauging and well purging information are presented on Gauging/Purging Calculations and Data sheets (**attached**).

CLEARWATER
GROUP
Environmental Services

Groundwater Monitoring Results

Results of the First Quarter 2005 monitoring are summarized below:

Depth to water:	Ranged from 1.56 (MW-3) to 3.68 (MW-4) feet below top of well casing (also shown in **Table 2**)
Flow direction/gradient:	East direction with a horizontal hydraulic gradient of 0.015 ft/ft (**Figure 3**)
Floating product:	None
Dissolved Oxygen:	24.9 mg/L (MW-1 with iSOC in operation); 6.8 mg/L (MW-4)
ORP:	45mV (MW-2); 62mV (MW-4)
Total iron:	6.8 mg/L (MW-4); 0.2 mg/L (MW-2)
Ferrous iron (Fe^{2+}):	0.0 mg/L (MW-2, MW-3); 0.4 mg/L (MW-1, MW-4)
TPH-g concentration:	<50 micrograms per liter (µg/L) (MW-1, MW-2, MW-3, MW-4)
Benzene concentration:	<0.50 µg/L (MW-1, MW-2, MW-3, MW-4)
MTBE Concentration:	<0.50 µg/L (MW-1)

Based on historical data, the area near former UST or monitoring well MW-1 has been recognized as the "hot spot" on site. Sampled TPH-g concentrations from MW-1 during the first through third quarterly monitoring events in 2004 were in the range of 2,900 µg/L to 18,000 µg/L. Benzene concentration ranged from 240 µg/L to 880 µg/L within the same period. Historically maximum MTBE concentration was 0.85 µg/L, which was sampled from the third quarter 2004. However, no hydrocarbons and MTBE were found above detection limits in the fourth quarter 2004 or first quarter 2005. Although on-site groundwater elevation observed in the first quarter 2005 was relatively high, it was not the historical maximum and is lower than fourth quarter 2004 levels. The groundwater elevation in MW-1 measured on 18 April 2005 was 113.67 ft above msl. Based on the historical data, TPH-g and benzene concentrations sampled in MW-1 ranged from 300 to 380 µg/L and 21 to 35 µg/L, respectively, when the water elevation was between 114.27 ft and 114.89 ft above msl. The cumulative groundwater elevations and analytical data for the current and previous quarters are listed in **Table 2**. The geochemical data in groundwater related to iSOC performance is listed in **Tables 3 and 4**.

Performance data for iSOC operation is presented in **Tables 3 and 4**.

Conclusions

- Groundwater samples obtained from monitoring wells MW-2 through MW-4 once again had analyzed concentrations less than detection limits for all the hydrocarbon compounds. It is consistent with historical data.

- Delivery of oxygen using iSOC has greatly increased the DO concentration in MW-1. DO was raised from 0.4 - 3.6 mg/L prior to iSOC installation to 27.7 - 39.7 mg/L during the period of 25 October 2004 and 18 April 2005 with an operational iSOC. Field measured DO, ORP and ferrous to total iron ratio suggest that the on-site groundwater conditions near MW-1 have changed from anaerobic to aerobic.

- Concentrations of hydrocarbons and MTBE sampled from the 'hot spot" monitoring well MW-1 were less than their detection limits during the fourth quarter 2004 and first quarter 2005 monitoring events. These levels were much lower than the levels found in March 2002 and 2003 when the observed groundwater elevations were as high as, or higher than, the elevation monitored in April 2005.

- Bio-enhancement with pure oxygen and iSOC delivery system has converted the anaerobic conditions in on-site "hot spot" with low hydrocarbons biodegradation into an aerobic environment containing super-saturated oxygen. Concentrations and groundwater data indicate that on-site hydrocarbons have greatly reduced.

- Observed change of hydrocarbon concentrations at the "hot spot" as well as the geochemical data suggests that the installed iSOC system has demonstrated its anticipated performance.

Recommendations

- To confirm the expected groundwater remediation prior to site closure, quarterly monitoring should continue; and the iSOC system maintain current operation for, at least, one additional quarter of low levels or non-detect.

- At that point, Clearwater recommends 4 quarters of post-iSOC treatment groundwater monitoring be performed to verify that no rebound occurs and the site is remediated.

- To verify subsurface conditions, indirect geochemical indicators (Attachment II) should be evaluated every 6 to 9 months.

Planned Activities

Clear will continue the operation and maintenance of the iSOC system during the forthcoming quarterly monitoring in 2005. The planned frequency for monitoring iSOC operation has been complete. Collection of DO, ORP, total and ferrous iron, pH, temperature, and specific conductivity measurements will continue during the quarterly monitoring events in 2005. Clearwater has conducted the 6-month Geo-chemical analysis at the site. A separate report is currently being prepared.

CLEARWATER
GROUP
Environmental Services

Certification

This report was prepared under the supervision of a Professional Geologist in the state of California at Clearwater Group. All statements, conclusions and recommendations are based solely upon published results from previous consultants, field observations by Clearwater Group and laboratory analysis performed by a California DHS-certified laboratory related to the work performed by Clearwater Group. Clearwater Group is not responsible for laboratory errors. The information and interpretation contained in this document should not be relied upon by a third party. The service provided by Clearwater Group has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Sincerely,
Clearwater Group

Matthew Ryder-Smith
Project Manager

James A. Jacobs P.G. # 4815, CHG # 88
Chief Hydrogeologist

REGISTERED GEOLOGIST
JAMES ALAN JACOBS
NO. 88
CERTIFIED HYDROGEOLOGIST
STATE OF CALIFORNIA

CLEARWATER
GROUP
Environmental Services

Attachments I

Figure 1: Site Vicinity
Figure 2: Site Plan
Figure 3: Groundwater Elevations and Gradient - 4/18/05
Figure 4: Dissolved-Phase Hydrocarbon Distribution - 4/18/05
Table 1: Well Construction Data
Table 2: Groundwater Elevations and Analytical Data
Table 3: iSOC Field Sampling Parameters
Table 4: Indirect Geochemical Indicators
Clearwater Groundwater Monitoring and Sampling Protocols
Clearwater Well Gauging Data/Purge Calculations and Well Purging Data
Laboratory Report and Chain-of-Custody Form

CLEARWATER
GROUP
Environmental Services

Attachment II

Indirect Geochemical Indicator Study

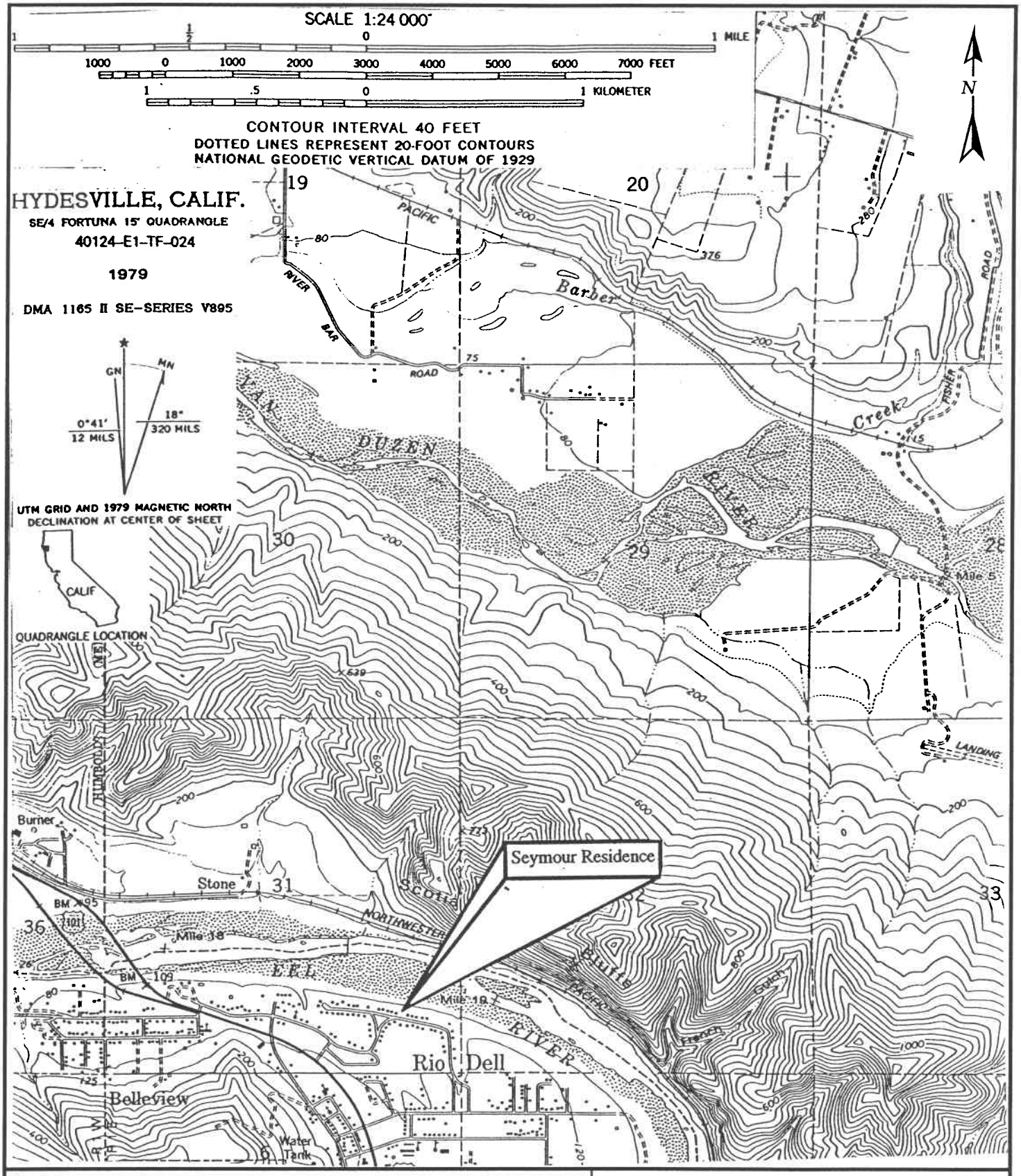
Enhanced bioremediation samples include the contaminants, as well as nitrate and sulfate, macronutrients: orthophosphate-phosphate and ammonia as nitrogen. Oxygen demand in the groundwater samples includes five-day biological oxygen demand (BOD_5) and chemical oxygen demand (COD). Total inorganic carbon will also be evaluated. Additional analyses include total organic carbon, total dissolved solids, and alkalinity (speciated). Total heterotrophic count and specific hydrocarbon degraders will be performed. A summary of analytical is shown below:

Direct Indicator	**Analyses**
Contaminant	TPH-g, TPH-d, BTEX, MTBE, TBA, etc.
Indirect Indicators	**Analyses**
Microbial Activity	Total Heterotrophic Plate Count Specific Hydrocarbon Degraders
Macronutrients	Ammonia as nitrogen Ortho-phosphate
Terminal Electron Acceptors	Oxygen, measured as dissolved oxygen (DO) in field Nitrate (lab analysis) Ferrous iron (Fe^{+2}) and Total iron (field kits) Sulfate (lab analysis)
Total Oxygen Demand	Solid or sediment oxygen demand (SOD, lab) Water oxygen demand: Chemical Oxygen Demand (COD, lab) Biological Oxygen Demand (BOD_5, lab)
REDOX, Field Parameters	Dissolved Oxygen (DO) (downhole meter) Oxidation-Reduction Potential (ORP) (downhole meter) Temperature, pH, conductivity (field meter)
Carbon Status	Total organic carbon (TOC, lab) Total inorganic carbon (TIC, lab) Speciated Alkalinity (lab)
Other Analyses	Total dissolved solids (TDS, lab)

CLEARWATER
GROUP
Environmental Services

CC: Jean and Everett Seymour
1111 Riverside Drive
Rio Dell, CA 95562

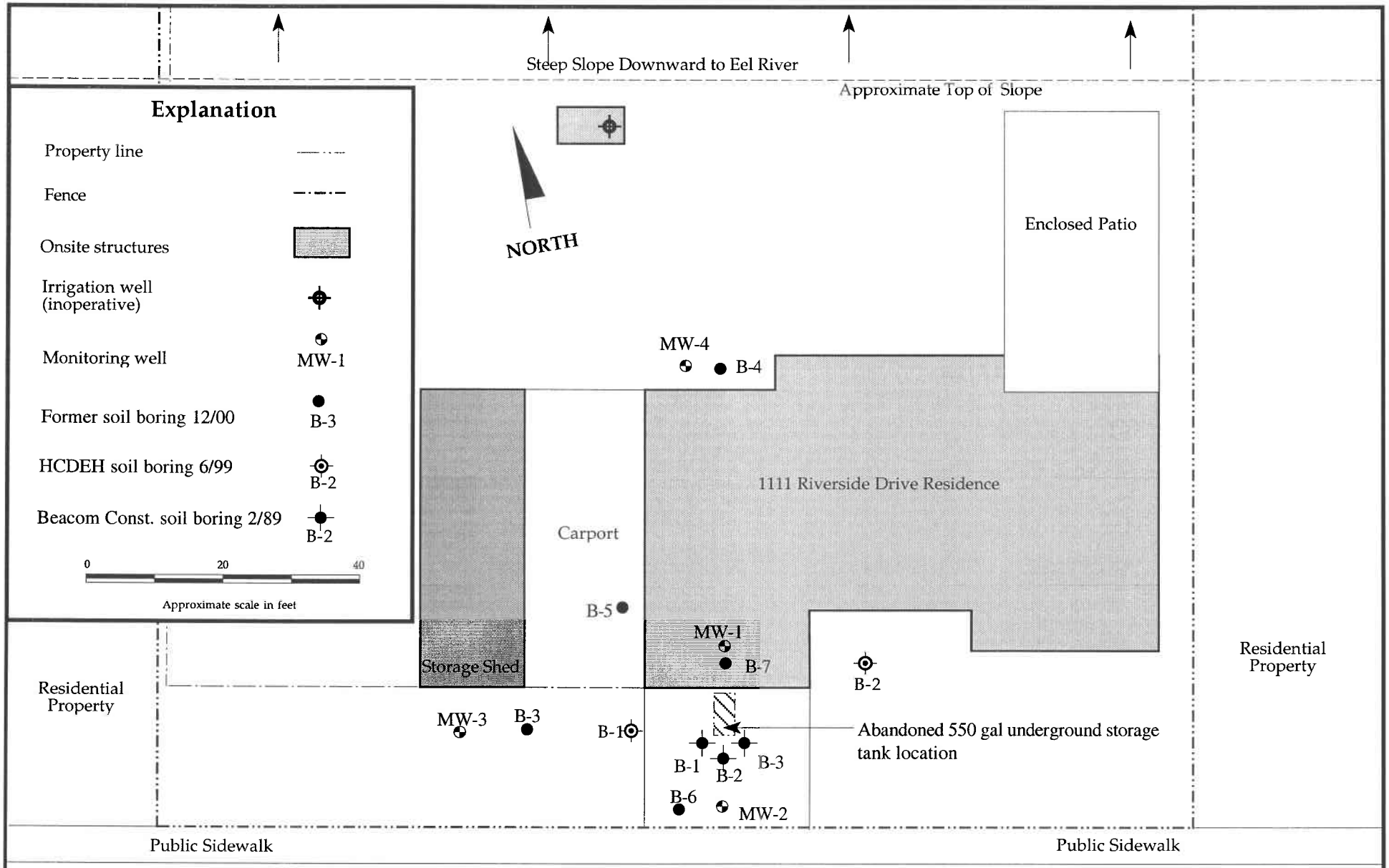
Ms. Kasey Ashley
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403



Site Vicinity
Seymour Residence
1111 Riverside Drive
Rio Dell, California

CLEARWATER GROUP

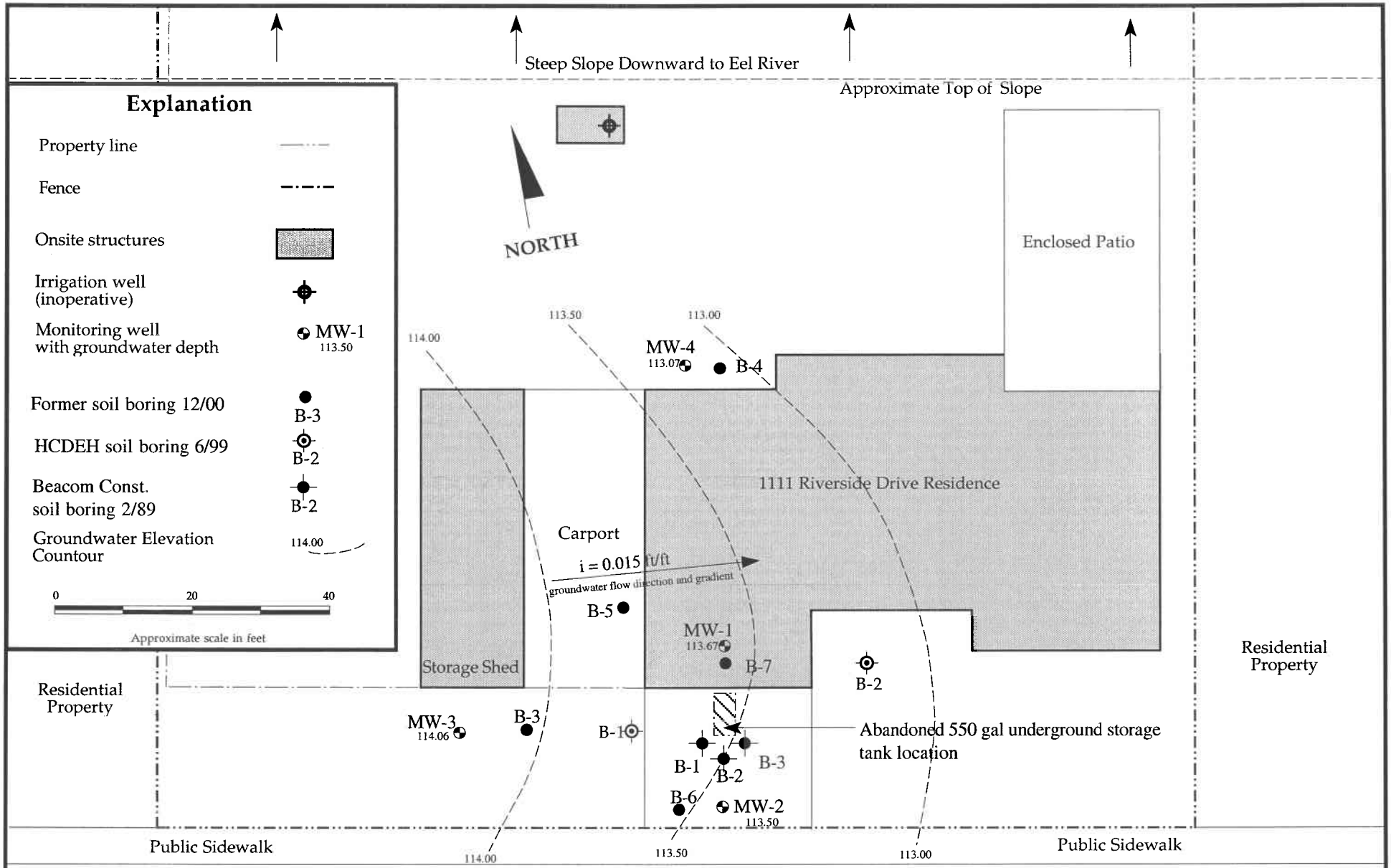
Project No.	Date	Figure
AE001C	4/04	1



Site Plan
Seymour Residence
1111 Riverside Drive
Rio Dell, California

CLEARWATER GROUP

Project No.	Report Date	Figure
AE001E	**5/05**	**2**

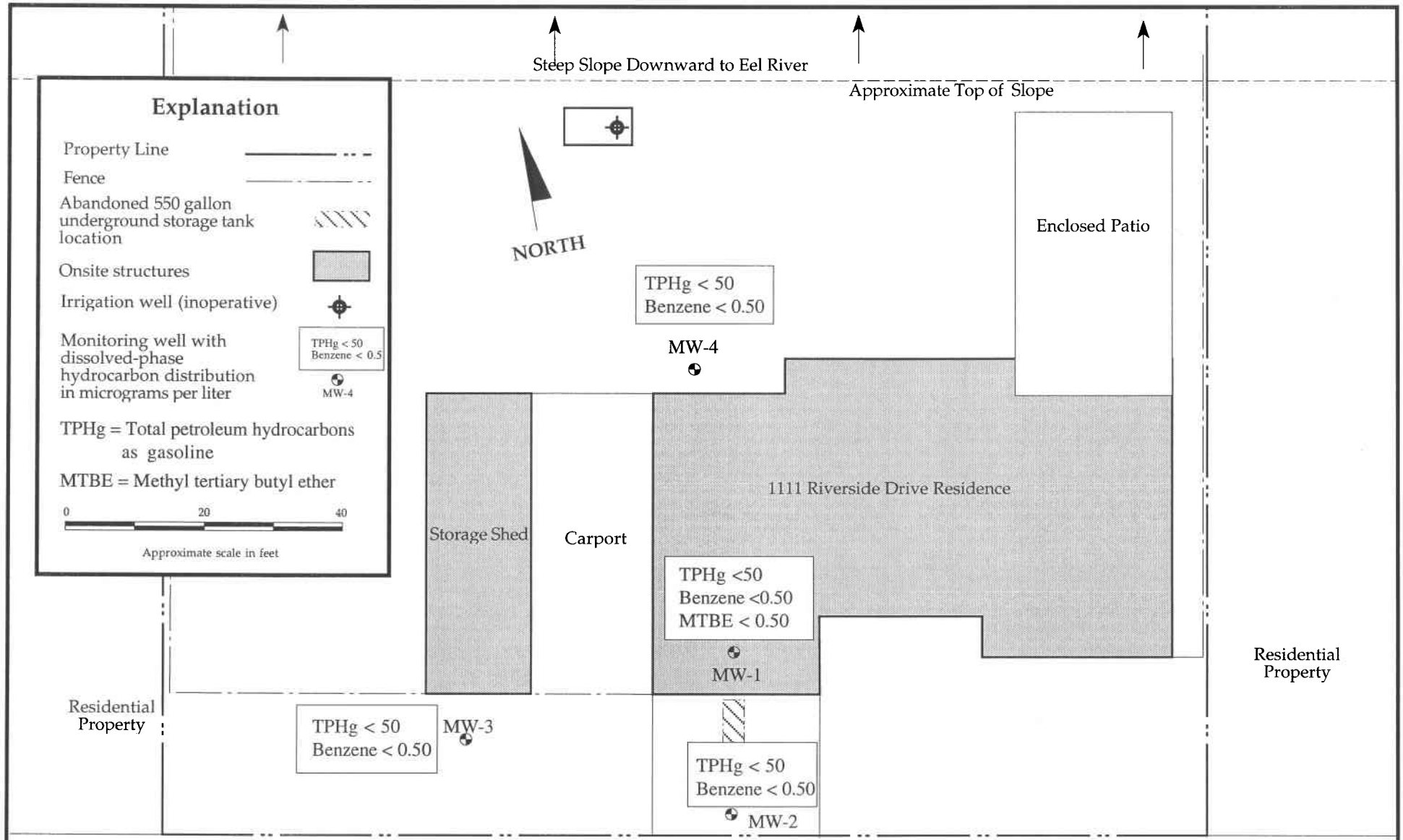


Groundwater Elevations and Gradient -4/18/05

Seymour Residence
1111 Riverside Drive
Rio Dell, California

CLEARWATER GROUP

Project No.	Report Date	Figure
AE001E	**05/05**	**3**



Dissolved-Phase Hydrocarbon Distribution - 4/18/05

Seymour Residence
1111 Riverside Drive
Rio Dell, California

CLEARWATER GROUP

Project No.	Report Date	Figure
AE001E	**5/05**	**4**

Table 1
WELL CONSTRUCTION DATA
Seymour Residence
1111 Riverside Drive
Rio Dell, California
Project # AE001C

Well Identification	Date Intstalled	Intstalled by	Casing Diameter (inches)	Total Depth (feet)	Blank Interval (feet)	Screened Interval (feet)	Slot Size (inches)	Filter Pack (feet)	Bentonite Seal (feet)	Cement (feet)
MW-1	3/7/2002	Clearwater	2	12.5	0-3	3-12.5	0.02	2-12.5	1-2	0-1
MW-2	3/7/2002	Clearwater	2	15	0-3	3-15	0.02	2-15	1-2	0-1
MW-3	3/7/2002	Clearwater	2	15	0-3	3-15	0.02	2-15	1-2	0-1
MW-4	3/7/2002	Clearwater	2	13	0-3	3-13	0.02	2-13	1-2	0-1

Table 2
Groundwater Elevations and Analytical Data
Seymour Residence
1111 Riverside Drive
Rio Dell, CA
Project # AE001C

Well No.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	Lead (µg/L)
MW-1	3/13/2002	116.42	2.15	114.27	380	35	6.8	16	37	<0.5	7.7	<0.5	<0.5	<0.5	<50	<5	<5
	6/18/2002	116.42	5.57	110.85	3,700	440	67	130	150	<0.5	28	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	116.42	6.78	109.64	6,900	660	77	400	440	<2.5	39	<2.5	<2.5	<2.5	<250	<25	--
	12/31/2002	116.42	0.69	115.73	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	65	<5	--
	3/26/2003	116.42	1.53	114.89	300	21	5.3	11	21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
	6/23/2003	116.42	5.16	111.26	8,200	550	180	400	710	--	--	--	--	--	--	--	--
	9/29/2003	116.42	7.87	108.55	28,000	1,800	1,100	1,200	3,700	<10	<100	<10	<10	<10	--	--	--
	12/23/2003	116.42	3.32	113.10	1,400	190	9.8	25	45	<0.5	5.5	<0.5	<0.5	<0.5	--	--	--
	3/18/2004	116.42	3.82	112.60	2,900	240	73	110	380	<1	<10	<1	<1	<1	--	--	--
	6/22/2004	116.42	5.47	110.95	18,000	880	660	610	2,400	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	--
	10/5/2004	116.42	9.92	106.50	4,200	290	11	250	140	0.85	<0.5	<0.5	<0.5	<0.5	--	--	--
	1/4/2005	116.42	1.74	114.68	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--
	4/18/2005	**116.42**	**2.75**	**113.67**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<5.0**	**<0.50**	**<0.50**	**<0.50**	**--**	**--**	**--**
MW-2	3/13/2002	115.65	9.35	106.30	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	26	<5
	6/18/2002	115.65	5.29	110.36	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	115.65	6.63	109.02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	12/31/2002	115.65	5.61	110.04	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	3/26/2003	115.65	5.55	110.10	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	6/23/2003	115.65	6.08	109.57	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	9/29/2003	115.65	7.15	108.50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	12/23/2003	115.65	6.09	109.56	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	3/18/2004	115.65	5.31	110.34	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	6/22/2004	115.65	6.11	109.54	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/5/2004	115.65	7.47	108.18	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	1/4/2005	115.65	1.18	114.47	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	4/18/2005	115.65	**3.32**	**112.33**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-3	3/13/2002	115.62	1.51	114.11	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	<5
	6/18/2002	115.62	4.81	110.81	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	115.62	5.48	110.14	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	12/31/2002	115.62	0.00	115.62	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	3/26/2003	115.62	0.25	115.37	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	6/23/2003	115.62	4.44	111.18	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	9/29/2003	115.62	8.01	107.61	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	12/23/2003	115.62	2.32	113.30	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	3/18/2004	115.62	3.37	112.25	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	6/22/2004	115.62	4.83	110.79	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/5/2004	115.62	10.31	105.31	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	1/4/2005	115.62	1.76	113.86	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	4/18/2005	**115.62**	**1.56**	**114.06**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Table 2
Groundwater Elevations and Analytical Data
Seymour Residence
1111 Riverside Drive
Rio Dell, CA
Project # AE001C

Well No.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	Lead (µg/L)
MW-4	3/13/2002	116.75	2.41	114.34	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	<5
	6/18/2002	116.75	7.31	109.44	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	116.75	10.47	106.28	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	12/31/2002	116.75	1.22	115.53	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	3/26/2003	116.75	2.27	114.48	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	6/23/2003	116.75	7.03	109.72	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	9/29/2003	116.75	10.75	106.00	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	12/23/2003	116.75	4.32	112.43	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	3/18/2004	116.75	4.53	112.22	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	6/22/2004	116.75	7.55	109.20	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/5/2004	116.75	12.82	103.93	DRY - NO ANALYSES CONDUCTED												
	1/4/2005	116.75	2.73	114.02	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	4/18/2005	116.75	3.68	113.07	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
				MCL	--	1	150	700	1,750	13							
				Taste & odor threshold	5	--	42	29	17	--							
				NCRWQCB Cleanup Goals	<50	0.50	42	29	17	5							

Notes :

TOC: Top of casing referenced to benchmark NGS (# AC 9251) Aluminum Cap HPGN D CA 01 PA (State HWY 21

DTW: Depth to water as referenced to benchmark.

GWE: Ground water elevation (msl) as referenced to benchmark

µg/L= micrograms per liter=parts per billion = ppb

"--": Not analyzed, available, or applicable

MCL: Maximum contaminant level, an enforceable drinking water standard

AL: Action level, a nonenforceable drinking water standard

Taste & odor threshold: A drinking water standard

NCRWQCB = North Coast Regional Water Quality Control Board (Region 1)

TPHg: Total Petroleum Hydrocarbons as Gasoline by EPA Method 8260B

BTEX by EPA Method 8260B

MTBE: Methyl Tertiary Butyl Ether by EPA Method 8260B

TBA: Tertiary Butyl Alcohol by EPA Method 8260B

DIPE: Di-Isopropyl Ether by EPA Method 8260B

ETBE: Ethyl Tertiary Butyl Ether by EPA Method 8260B

TAME: Tertiary Amyl Methyl Ether by EPA Method 8260B

Methanol by EPA Method 8260B

Ethanol: By EPA Method 8260B

Table 3
iSOC Field Sampling Parameters
Seymour Residence
111 Riverside Drive, Rio Dell, CA

Well I. D.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	pH	TEMP (°F)	COND. (mS/cm)	DO mg/L	ORP mV	Total Fe mg/L	Fe^{2+} mg/L
MW-1	10/5/2004 (pre install)	116.42	9.92	106.50	6.27	66.6	619	3.6	47	8.8	4.6
MW-1	10/25/2004 (2-week)	116.42	2.98	113.44	6.47	62.9	273	39.7	54	1.1	0
MW-1	11/2/2004 (4-week)	116.42	3.91	112.51	6.26	70.1	290	38.1	50	0.4	0
MW-1	12/03/2004 (8-weeks)	116.42	3.62	112.80	6.28	49.3	257	27.7	46	2.4	0
MW-1	1/4/2005 (1st quarter)	116.42	1.74	114.68	6.47	57.7	255	30.6	47	2.8	0
MW-1	4/18/2005 (2nd quarter)	116.42	2.75	113.67	5.7	57.8	249	24.9	58	2.2	0.4
MW-2	10/5/2004 (pre install)	115.65	7.47	108.18	6.12	69.5	342	5.0	17	1.0	0.0
MW-2	10/25/2004 (2-week)	115.65	5.69	109.96	6.49	64.5	364	6.5	52	0.3	0.6
MW-2	11/2/2004 (4-week)	115.65	5.25	110.40	6.05	68.5	380	6.9	53	0.0	0.0
MW-2	12/03/2004 (8-weeks)	115.65	4.46	111.19	6.18	49.6	257	5.1	43	0.0	0.0
MW-2	1/4/2005 (1st quarter)	115.65	1.18	114.47	6.49	57.4	372	5.5	39	0.4	0.0
MW-2	4/18/2005 (2nd quarter)	115.65	3.32	112.33	6.24	59.8	355	2.5	45	0.2	0.0

Notes:

TOC	Top of casing elevation referenced to project datum
DTW	Depth to water below TOC
GWE	Groundwater elevation (TOC-DTW)
DO	dissolved oxygen - milligrams per liter (mg/L)
ORP	oxidation-reduction potential - millivolts (mV)
Total Fe	total iron - milligrams per liter (mg/L)
Fe^{2+}	ferrous iron - milligrams per liter (mg/L)

TABLE 4 - INDIRECT GEOCHEMICAL INDICATORS

Site - Jean and Everett Seymour Property
1111 Riverside Dr.
Rio Dell, California

WELL	DATE	Total Iron (mg/l); Field Test	Ferrous Iron Fe^{+2} (mg/l); Field Test	Ferric Iron Fe^{+3} (mg/l) by subtraction	Fe^{+2}/Fe total Ratio	Dissolved Oxygen (mg/l); Field Test	Oxidation Reduction Potential (ORP) (mV); Field Test	pH Field Test	TPH-gasoline (ug/l)	Benzene (ug/l)
MW-1	10/6/2004	8.8	4.6	4.4	52%	3.6	47	6.27	4,200	290
	1/5/2005	2.8	0.0	2.8	0%	30.6	47	6.47	<50	<0.5
	4/18/2005	**2.2**	**0.4**	**1.8**	**18%**	**24.9**	**58**	**5.7**	**<50**	**<0.5**
MW-2	10/6/2004	1.0	0.0	1.0	0%	5	17	6.07	<50	<0.5
	1/5/2005	0.4	0.0	0.4	0%	5.5	39	6.49	<50	<0.5
	4/18/2005	**0.2**	**0.0**	**0.2**	**0%**	**2.5**	**45**	**6.24**	**<50**	**<0.5**
MW-3	10/6/2004	3.0	0.0	3.0	0%	3.6	-6	6.28	<50	<0.5
	1/5/2005	6.6	0.0	6.6	0%	4.9	55	6.17	<50	<0.5
	4/18/2005	**2.0**	**0.0**	**2.0**	**0%**	**1.8**	**60**	**6.01**	**<50**	**<0.5**
MW-4	10/6/2004	3.0	0.0	3.0	0%	3.6	-6	6.28	<50	<0.5
	1/5/2005	1.4	0.0	1.4	0%	6.6	40	6.39	<50	<0.5
	4/18/2005	**1.4**	**0.4**	**1.0**	**29%**	**6.8**	**62**	**5.39**	**<50**	**<0.5**

NOTES:
mg/L: miligrams per liter.
ND: Not detected above the laboratory reporting limit (see laboratory reports for reporting limits).
NA: Not analyzed
calc: Calculation performed in the laboratory

CLEARWATER GROUP

Groundwater Monitoring and Sampling Field Procedures

Groundwater Monitoring

Prior to beginning, a decontamination area is established. Decontamination procedures consist of scrubbing downhole equipment in an Alconox® solution wash (wash solution is pumped through any purging pumps used), and rinsing in a first rinse of potable water and a second rinse of potable water or deionized water if the latter is required. Any non-dedicated down hole equipment is decontaminated prior to use.

Prior to purging and sampling a well, the static water level is measured to the nearest 0.01 feet with an electronic water sounder. Depth to bottom is typically measured once per year, at the request of the project manager, and during Clearwater's first visit to a site. If historical analytical data are not available, with which to establish a reliable order of increasing well contamination, the water sounder and tape will be decontaminated between each well. If floating separate-phase hydrocarbons (SPH) are suspected or observed, SPH is collected using a clear, open-ended product bailer, and the thickness is measured to the nearest 0.01 feet in the bailer. SPH may alternatively be measured with an electronic interface probe. Any monitoring well containing a measurable thickness of SPH before or during purging is not additionally purged and no sample is collected from that well. Wells containing a hydrocarbon sheen are sampled unless otherwise specified by the project manager. Field observations such as well integrity as well as water level measurements and floating product thicknesses are noted on the Gauging Data/Purge Calculations form.

Well Purging

Each monitoring well to be sampled is purged using either a PVC bailer or a submersible pump. Physical parameters (pH, temperature and conductivity) of the purge water are monitored during purging activities to assess if the water sample collected is representative of the aquifer. If required, parameters such as dissolved oxygen, turbidity, salinity etc. are also measured. Samples are considered representative if parameter stability is achieved. Stability is defined as a change of less than 0.25 pH units, less than 10% change in conductivity in micro mhos, and less than 1.0 degree centigrade (1.8 degrees Fahrenheit) change in temperature. Parameters are measured in a discreet sample decanted from the bailer separately from the rest of the purge water. Parameters are measured at least four times during purging; initially, and at volume intervals of one well volume. Purging continues until three well casing volumes have been removed or until the well completely dewaters. Wells which dewater or demonstrate a slow recharge, may be sampled after fewer than three well volumes have been removed. Well purging information is recorded on the Purge Data sheet. All meters used to measure parameters are calibrated daily. Purge water is sealed, labeled, and stored on site in D.O.T.-approved 55-gallon drums. After being chemically profiled, the water is removed to an appropriate disposal facility by a licensed waste hauler.

Groundwater Sample Collection

Groundwater samples are collected immediately after purging or, if purging rate exceeds well recharge rate, when the well has recharged to at least 80% of its static water level. If recharge is extremely slow, the well is allowed to recharge for at least two hours, if practicable, or until sufficient volume has accumulated for sampling. The well is sampled within 24 hours of purging or repurged. Samples are collected using polyethylene bailers, either disposable or dedicated to the well. Samples being analyzed for compounds most sensitive to volatilization are collected first. Water samples are placed in appropriate laboratory-supplied containers, labeled, documented on a chain of custody form and placed on ice in a cooler for transport to a state-certified analytical laboratory. Analytical detection limits match or surpass standards required by relevant local or regional guidelines.

Quality Assurance Procedures

To prevent contamination of the samples, Clearwater personnel adhere to the following procedures in the field:

- A new, clean pair of latex gloves are put on prior to sampling each well.
- Wells are gauged, purged and groundwater samples are collected in the expected order of increasing degree of contamination based on historical analytical results.
- All purging equipment will be thoroughly decontaminated between each well, using the procedures previously described at the beginning of this section.
- During sample collection for volatile organic analysis, the amount of air passing through the sample is minimized. This helps prevent the air from stripping the volatiles from the water. Sample bottles are filled by slowly running the sample down the side of the bottle until there is a convex meniscus over the mouth of the bottle. The lid is carefully screwed onto the bottle such that no air bubbles are present within the bottle. If a bubble is present, the cap is removed and additional water is added to the sample container. After resealing the sample container, if bubbles still are present inside, the sample container is discarded and the procedure is repeated with a new container.

Laboratory and field handling procedures may be monitored, if required by the client or regulators, by including quality control (QC) samples for analysis with the groundwater samples. Examples of different types of QC samples are as follows:

- Trip blanks are prepared at the analytical laboratory by laboratory personnel to check field handling procedures. Trip blanks are transported to the project site in the same manner as the laboratory-supplied sample containers to be filled. They are not opened, and are returned to the laboratory with the samples collected. Trip blanks are analyzed for purgable organic compounds.
- Equipment blanks are prepared in the field to determine if decontamination of field sampling equipment has been effective. The sampling equipment used to collect the groundwater samples is rinsed with distilled water which is then decanted into laboratory-supplied containers. The equipment blanks are transported to the laboratory, and are analyzed for the same chemical constituents as the samples collected at the site.
- Duplicates are collected at the same time that the standard groundwater samples are being collected and are analyzed for the same compounds in order to check the reproducibility of laboratory data. They are typically only collected from one well per sampling event. The duplicate is assigned an identification number that will not associate it with the source well.

Generally, trip blanks and field blanks check field handling and transportation procedures. Duplicates check laboratory procedures. The configuration of QC samples is determined by Clearwater depending on site conditions and regulatory requirements.

CLEARWATER GROUP
229 Tewksbury Avenue,
Point Richmond, CA 94801
Tel: (510) 307-9943 Fax: (510) 232-2823

WELL GAUGING/PURGING CALCULATIONS DATA SHEET

Date: 4/18/05 | Job No.: REDO12 | Location: 111 RIVERSIDE DRIVE RIO DELL, CA

Tech(s): RODNEY BERRY, ERIC AUSTIN

Drums on Site @ TOA/TOD — Soil: 0 Water: 0

Total number of DRUMS used for this event — Soil: 0 Water: 0

Well No.	Diameter (in)	DTB (ft)	DTW (ft)	ST (ft)	CV (gal)	PV (gal)	SPL (ft)	Notes
MW-1	2	12.21	2.75	9.46	1.51	4.54		
2	"	14.85	3.32	11.53	1.85	5.55		
3	"	14.89	1.56	13.33	2.13	6.39		
4	"	12.81	3.68	9.13	1.46	4.38		

Explanation:
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW) must be > 1 foot
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf)
2-inch diameter well cf = 0.16 gal/ft
4-inch diameter well cf = 0.65 gal/ft
6-inch diameter well cf = 1.44 gal.ft

PURGING DATA

SHEET 1 OF 2

Job No.: AE0015 Location: 111 Riverside Drive, Rio Dell, CA Date: 4/8/05 Tech: Rodney Barry

MW-4

DO = 06.8 Fe = 1.4
ORP = 06.2 Fe 2+ = 0.4

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH 1700
MW-4	1638	2.00	80	54.8	5.40
Calc. purge	1644	3.00	81	54.8	5.40
volume	1648	4.50	81	54.8	5.39
4.38					

Sample for: TPHg TPHd 8010 8260 BTEX Other

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen

Very light brown, low, good, no sheen

MW-3

DO = 01.8 Fe = 2
1730 ORP = 060 Fe 2+ = 0

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-3	1717	2.00	144	58.1	5.99
Calc. purge	1721	4.00	144	58.1	5.99
volume	1725	6.50	144	58.1	6.01
6.39					

Sample for: TPHg TPHd 8010 8260 BTEX Other

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen

light brown, low, good, no sheen

MW-2

DO = 02.5 Fe = 0.2
1800 ORP = 045 Fe 2+ = 0

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-2	1745	2.00	355	59.8	6.24
Calc. purge	1748	4.00	357	59.7	6.23
volume	1753	6.00	355	59.8	6.24
5.55					

Sample for: TPHg TPHd 8010 8260 BTEX Other

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen

light brown, low, good, no sheen

CLEARWATER GROUP, 229 Tewksbury Ave., Point Richmond, California 94801
Phone: 510-307-9943 Fax: 510-232-2823

PURGING DATA

SHEET 2 OF 2

111 RIVERSIDE DRIVE

Job No.: 460016 Location: Rio Dell, CA Date: 4/18/05 Tech: Rodney Backus

DO = 24.9 FE = 2.2
ORP = 058 Fe^{2+} = 0.4

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-1	1814	2.00	248	57.8	5.70
	1819	3.60	247	57.8	5.69
Calc. purge volume 4.59	1823	5.60	249	57.8	5.70

Sample for: TPHg TPHd 8010 BTEX Other 5OXYS 8260B

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen

BROWN, low, Good, No Sheen

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
Calc. purge volume					

Sample for: TPHg TPHd 8010 BTEX Other

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
Calc. purge volume					

Sample for: TPHg TPHd 8010 BTEX Other

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen

CLEARWATER GROUP, 229 Tewksbury Ave., Point Richmond, California 94801
Phone: 510-307-9943 Fax: 510-232-2823

KIFF ANALYTICAL LLC

Report Number : 43344
Date : 4/27/2005

Matthew Ryder-Smith
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 4 Water Samples
Project Name : SEYMOUR RESIDENCE
Project Number : AE001E

Dear Mr. Ryder-Smith,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 43344
Date : 4/27/2005

Project Name : **SEYMOUR RESIDENCE**
Project Number : **AE001E**

Sample : **MW-1** Matrix : Water Lab Number : 43344-01
Sample Date :4/18/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	4/25/2005
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	4/25/2005
Toluene - d8 (Surr)	80.7		% Recovery	EPA 8260B	4/25/2005
4-Bromofluorobenzene (Surr)	95.6		% Recovery	EPA 8260B	4/25/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 43344

Date : 4/27/2005

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001E**

Sample : **MW-2** Matrix : Water Lab Number : 43344-02

Sample Date :4/18/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	4/25/2005
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	4/25/2005
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	4/25/2005
4-Bromofluorobenzene (Surr)	94.2		% Recovery	EPA 8260B	4/25/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 43344
Date : 4/27/2005

Project Name : **SEYMOUR RESIDENCE**
Project Number : **AE001E**

Sample : **MW-3** Matrix : Water Lab Number : 43344-03
Sample Date :4/18/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	4/23/2005
Toluene - d8 (Surr)	93.2		% Recovery	EPA 8260B	4/23/2005
4-Bromofluorobenzene (Surr)	95.9		% Recovery	EPA 8260B	4/23/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 43344

Date : 4/27/2005

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001E**

Sample : **MW-4** Matrix : Water Lab Number : 43344-04

Sample Date :4/18/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	4/23/2005
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	4/27/2005
Toluene - d8 (Surr)	83.2		% Recovery	EPA 8260B	4/23/2005
4-Bromofluorobenzene (Surr)	97.2		% Recovery	EPA 8260B	4/23/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

Report Number : 43344

Date : 4/27/2005

QC Report : Method Blank Data

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001E**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	4/26/2005
Benzene	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Toluene	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	4/25/2005
Toluene - d8 (Surr)	101		%	EPA 8260B	4/25/2005
4-Bromofluorobenzene (Surr)	94.7		%	EPA 8260B	4/25/2005
Benzene	< 0.50	0.50	ug/L	EPA 8260B	4/23/2005
Toluene	< 0.50	0.50	ug/L	EPA 8260B	4/23/2005
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	4/23/2005
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	4/23/2005
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	4/23/2005
Toluene - d8 (Surr)	92.4		%	EPA 8260B	4/23/2005
4-Bromofluorobenzene (Surr)	105		%	EPA 8260B	4/23/2005
Benzene	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Toluene	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	4/25/2005
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	4/25/2005
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	4/25/2005
Toluene - d8 (Surr)	86.4		%	EPA 8260B	4/25/2005
4-Bromofluorobenzene (Surr)	99.4		%	EPA 8260B	4/25/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 43344

Date : 4/27/2005

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001E**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	43381-02	<0.50	40.0	40.0	38.4	37.1	ug/L	EPA 8260B	4/26/05	96.0	92.7	3.57	70-130	25
Toluene	43381-02	<0.50	40.0	40.0	38.9	37.5	ug/L	EPA 8260B	4/26/05	97.3	93.8	3.65	70-130	25
Benzene	43344-02	<0.50	40.0	40.0	40.3	38.4	ug/L	EPA 8260B	4/25/05	101	95.9	4.87	70-130	25
Toluene	43344-02	<0.50	40.0	40.0	40.6	38.5	ug/L	EPA 8260B	4/25/05	102	96.3	5.22	70-130	25
Benzene	43363-03	<0.50	40.0	40.0	37.0	37.5	ug/L	EPA 8260B	4/23/05	92.5	93.8	1.39	70-130	25
Toluene	43363-03	<0.50	40.0	40.0	38.4	36.9	ug/L	EPA 8260B	4/23/05	96.0	92.4	3.88	70-130	25
Benzene	43346-01	1.1	40.0	40.0	39.4	38.5	ug/L	EPA 8260B	4/25/05	95.9	93.6	2.43	70-130	25
Toluene	43346-01	<0.50	40.0	40.0	38.1	37.3	ug/L	EPA 8260B	4/25/05	95.2	93.3	2.00	70-130	25
Tert-Butanol	43346-01	<5.0	200	200	192	190	ug/L	EPA 8260B	4/25/05	96.0	95.0	1.11	70-130	25
Methyl-t-Butyl Ether	43346-01	<0.50	40.0	40.0	38.4	38.6	ug/L	EPA 8260B	4/25/05	96.1	96.5	0.370	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 43344

Date : 4/27/2005

QC Report : Laboratory Control Sample (LCS)

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001E**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	4/26/05	87.6	70-130
Toluene	40.0	ug/L	EPA 8260B	4/26/05	91.7	70-130
Benzene	40.0	ug/L	EPA 8260B	4/25/05	93.2	70-130
Toluene	40.0	ug/L	EPA 8260B	4/25/05	96.6	70-130
Benzene	40.0	ug/L	EPA 8260B	4/23/05	94.3	70-130
Toluene	40.0	ug/L	EPA 8260B	4/23/05	96.7	70-130
Benzene	40.0	ug/L	EPA 8260B	4/25/05	94.8	70-130
Toluene	40.0	ug/L	EPA 8260B	4/25/05	97.4	70-130
Tert-Butanol	200	ug/L	EPA 8260B	4/25/05	96.8	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	4/25/05	102	70-130

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Lab No. 43344 Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Matthew Rooke-Smith
Company/Address: Cornerstone Group 239 Tewksbury Ave, Pt Richmond, CA
Phone No.: (510) 307-9943 FAX No.: (510) 232-2823
Project Number: AR0016 P.O. No.:
Project Name: Seymour Residence
Project Address: 11 Riverside Drive Rio Dell, CA

California EDF Report? [X] Yes [ ] No

Recommended but not mandatory to complete this section:
Sampling Company Log Code: CWGD
Global ID: T0602300031
EDF Deliverable To (Email Address): Chris@cornerstonegroup.com
Sampler Signature: Robert Brady

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Container: SLEEVE	Preservative: HCl	Preservative: HNO_3	Preservative: ICE	Preservative: NONE	Matrix: WATER	Matrix: SOIL	BTEX (8021B)	BTEX/TPH Gas/MTBE (8021B/M8015)	TPH as Diesel (M8015)	TPH as Motor Oil (M8015)	TPH Gas/BTEX/MTBE (8260B)	5 Oxygenates/TPH Gas/BTEX (8260B)	7 Oxygenates/TPH Gas/BTEX (8260B)	5 Oxygenates (8260B)	7 Oxygenates (8260B)	Lead Scav. (1,2 DCA & 1,2 EDB - 8260B)	EPA 8260B (Full List)	Volatile Halocarbons (EPA 8260B)	Lead (7421/239.2) TOTAL (X) W.E.T. (X)	TPHg, BTEX 8260	TAT: 12 hr/24 hr/48 hr/72 hr/1 wk	For Lab Use Only
MW-1	4/18/05	1830	X		X				X							X									1wk	01
2		1800																						X		02
3		1730																								03
4		1700																								04

	Date	Time		
Relinquished by: Robert Brady	4/20/05	830	Received by:	Remarks:
Relinquished by:			Received by:	
Relinquished by:	04/20/05	1045	Received by Laboratory: Morten Wyndhamnes Kiff Analytical LLC	Bill to:

Distribution: White - Lab, Pink - Originator

Forms/coc 121001.fh9